



CORNELL COMMUNICATIONS, INC.

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COMMUNICATOR RN NURSE CALL SYSTEMS:

Series 5000 = Tone / Visual

Series 5500 = Audio / Visual

(FORMERLY HCE CUMULA 1, 2, & 3)

SYSTEM REFERENCE GUIDE

DOCUMENT NO. D-5500-REF

INTRODUCTION:

ABOUT THIS SERVICE MANUAL:

The Communicator Service Manual (Cornell Part #05-6887023-101) is intended to provide all the information needed to plan, install, operate and service a complete Communicator RN system.

THIS MANUAL CONTAINS THE FOLLOWING SECTIONS:

- A Table of Contents
- A System Reference Guide (this document) which provides general information, safety precautions and systems planning information
- A complete set of Installation and Service Guides (ISG) for the various system components used within the Communicator RN product line. These ISGs each have their own Cornell Part Number, and have been organized into the following groups:
 - Controllers
 - User Interface Equipment
 - Addressable Stations – Visual (non-audio types)
 - Addressable Stations – Audio / Visual
 - Non-Addressable Stations
 - Lights
 - Call Cords
- Appendices – which include the following:
 - Appendix A – Communicator RN Equipment List
 - Appendix B – [Reserved for Future Use]
 - Appendix C – Communicator RN Configuration Instructions
 - Appendix D – Radio Paging Configuration Instructions

***IN ORDER TO ASSIST YOU IN FINDING BASIC INFORMATION QUICKLY,
THE FOLLOWING PAGE CONTAINS A “TABLE OF CONTENTS” FOR
THIS REFERENCE GUIDE DOCUMENT***

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SYSTEM DESCRIPTION:

COMMUNICATOR 5000 (TONE / VISUAL VERSIONS):

Communicator 5000 Nurse Call Systems are Tone / Visual Signaling Systems – which means that when calls are placed on the system:

Audible Indication is performed via tones (Electronic Sounders / BEEPERS)

Visual Indication is provided via lamps and/or LEDs.

Communicator 5000 Nurse Call Systems do not include voice communications or intercom talk-paths.

Each Communicator 5000 Visual Nurse Call System typically consists of a microprocessor-based control unit, annunciator panels, duty stations, a group of addressable stations, associated non-addressable stations, and indicator lights. All of these devices are interconnected to provide multi-level signaling via tone/visual indication. The following information explains the role of each of the various components found within a typical system:

LOOP (ADDRESSABLE STATION LOOP / DATA LOOP):

One of the key concepts in understanding both the 5000 and the 5500 Nurse Call Systems is the concept of the “Loop” – which is a bi-directional data circuit connecting all addressable stations on the system to the Control Unit:

Each Loop supports a total of 40 Addressable Stations, as follows:

- 32 “Normal” Addresses – used by every addressable station type, except for Duty Stations
- 8 “Duty Station” Addresses – which are only used by Duty Stations.

ALL Non-Addressable stations MUST connect to the 5000-Series Nurse Call System via an Addressable Station

CONTROL UNIT:

The control unit is the functional core of each 5000-Series system. Each system requires one Control Unit.

Each Control Unit is essentially a panel, with a plain metal door, which contains the following equipment:

- Power supplies – to provide operating power to all other system components
- A Processor Module – This microprocessor-based component regulates the operation of the system, and performs self-diagnostic functions. The Processor Module is the electronic hub, to which all other system components connect.

CONTROL UNIT CAPACITIES:

The capacity of each 5000-Series Control Unit is as follows:

Control Unit Model No:	HTN7616UA	HTN7617UA	HTN7680UA
Loops (with Dome Lamps)	1	2	4
(without Dome Lamps)	2	2	4
Annunciators	3	3	4
Console (Tone/Visual Version)	0*	0*	4
Paging	N	N	Y

* (If Tone / Visual Console is needed, select corresponding 5500-Series Controller)

The Control Unit is typically installed out-of-sight, in a secure central location, such as an equipment, storage, or electrical room.

ANNUNCIATOR - MODEL HRN7614UA:

Annunciators provide the primary interface between Care Staff and the 5000-Series Nurse Call System.

Each Annunciator is a 4-gang size, wall-mounted device, which provides Tone / Visual indication by means of the following features:

- A "Tone Silence" pushbutton is provided to temporarily silence tones being produced at the Annunciator. Any new status condition will automatically cause re-sound operation.
- A "Lamp Test" pushbutton is provided for actuation of a Lamp Test function, which allows operation of all Annunciator LEDs to be verified.

The pushbuttons may also be utilized to actuate several diagnostic display modes, which are useful during installation, and for identifying and troubleshooting fault conditions.

- A dual-tone sounder produces different sounds / tone patterns for different status conditions
- An array of 32 Programmable Red LEDs (4 rows of 8) provides visual indication of the corresponding station(s) that are mapped to each LED. Typically, one LED corresponds to a bed or a room. Each of these LEDs illuminates / flashes at different rates, in order to indicate the highest priority of any active call that is linked to it.
- A Green "Power" LED is provided to indicate that the unit is receiving operating power
- A Yellow "Fault" LED is provided for indication of Fault conditions

CONSOLE (TONE/VISUAL VERSION) – MODEL HCN7638UA:

In some cases, a Tone / Visual version of the Standard LCD Staff Console is used in place of one or more annunciators. In this particular case, the handset assembly is omitted from the unit.

Refer to "Communicator 5500 System / Console" portion of this document for more information.)

DUTY STATIONS – MODEL HWN7606UC:

Duty Stations are usually installed in areas where staff members may be when they are away from the annunciator location. They are used to provide supplementary tone/visual indication.

Each Duty Station is a 2-gang size, wall-mounted device, which provides Tone / Visual indication by means of the following features:

- A single-tone sounder provides different tone patterns for different status conditions, and indicates the highest-priority call existing within the group of stations assigned to the Duty Station.
- An array of three LEDs (Red, Yellow, & Green) provides Visual indication of the highest-priority call existing within the group of stations assigned to the Duty Station. In some cases, a single LED illuminates, in other cases, the LEDs may flash or cycle in a particular pattern.

Please note: As stated within "Loop" (see previous page) Duty Stations utilize special addresses. Duty Station Addresses are set by cutting jumper wires located on their circuit boards.

ADDRESSABLE STATIONS (NON-AUDIO TYPES):

All Calls that are placed on the 5000-Series Nurse Call System must be passed through an Addressable Station. 5000-Series Systems utilize Non-Audio type Addressable Stations.

Each such Non-Audio Addressable Station is equipped with:

- Programmable Inputs – for connection to internal switches and/or jacks, and for connection to non-addressable station switches, which are used to initiate calls on the system
- Programmable Outputs – for connection to internal relays and/or reset circuits, sounders, and to LED / Dome Lamp Driver Outputs.
- Interfaces to a Data Circuit (Loop) - which provides a digital communications path between each addressable station and the Processor Module within the Control Unit.
- Address Switches – which are used to set the address of each device in the field.

NON-ADDRESSABLE STATIONS

Non-Addressable Stations must be connected to the system via an associated addressable station. Utilization of Non-Addressable Stations, where it is practical to do so, provides three key benefits:

- **Address Conservation** - They do not count towards the maximum number of addresses supported by the associated controller. Proper utilization of Non-Addressable Stations may permit use of a lower-capacity controller, or may create more available space for future expansion of the system.
- **Material Cost** – Non-Addressable Stations are less costly than equivalent addressable units. This is due to their relatively simple construction.
- **Labor / Wire Cost** – The wiring between a Non-Addressable Station and the Addressable Station to which it connects requires less wire and terminations than what would be needed if both stations were addressable. This reduces wire cost and the associated labor to run and to terminate such wiring.

INDICATOR LIGHTS / ZONE LIGHTS:

Indicator Lights must be driven via an associated Addressable Station. The Communicator 5000 System usually utilizes a standard lamp color scheme, where particular lamp colors and flash patterns are utilized for particular call priorities.

Indicator Lights (Dome Lamps) are usually installed in the corridor, outside of each room where call stations are located within such rooms.

Dome Lamps consist of a 3-gang size plastic shell / backplate assembly, with either 1, 3, or 5 lamp sockets and bulbs and a translucent lens cover.

Cornell Communications does not specifically manufacture a Zone Lamp. Where such Zone Lamps are required, a standard Dome Lamp is usually provided, along with one or more Smart-Station type addressable stations to drive it.

ADDITIONAL / OPTIONAL EQUIPMENT & FEATURES:

Radio Paging Interface – Communicator RN Controllers may be interfaced to Cornell's WaveWare paging system. Availability of Radio Paging features is dependent upon whether the system will be configured with a Console or not. (Refer to Appendices "H" & "J" of the Communicator RN Service Manual for more information, depending upon the controller being utilized.)

COMMUNICATOR 5500 (AUDIO / VISUAL VERSIONS):

Communicator 5500 Nurse Call Systems are Audio / Visual Signaling Systems – which means that when calls are placed on the system:

Audible Indication is performed via tones (Electronic Sounders / Beepers)

Supplemental Live-Voice Communications functions may be performed via one or more integrated Audio Channels (This feature is not present on the 5000-Series Systems)

Visual Indication is provided via lamps and/or LEDs.

Each Communicator 5500 Visual Nurse Call System typically consists of a microprocessor-based control unit, one or more consoles, annunciator panels, duty stations, a group of addressable stations, associated non-addressable stations, and indicator lights. All of these devices are interconnected to provide multi-level signaling via Audio / Visual indication.

The following information explains the role of each of the various components found within a typical system:

CONTROL UNIT:

Each 5500-Series Control Unit incorporates the following features, in addition to those of the 5000-Series:

- Termination points for one or more Staff Consoles – two main types of controllers are available:
 - Single-Console Control Units – designed to only support a single console
 - Multi-Console Control Units – designed to support up to either two or four consoles
- Audio Switching Module – provides a connection point for one or more Audio Amplifier Modules, and talk-path control / management features, which permit bi-directional talk paths between Staff Consoles and their associated Audio / Visual Addressable Stations.
 - Single-Console Control Units = Single-Channel Audio Board, which provides a single talk-path between the stations and the Console. Switching is not required, because a single console limits the system to a single talk-path at any given time.
 - Multi-Console Control Units = Multi-Channel Audio Switching Module, which provides means for either two or four Audio Channels (one channel per Console), permitting two or four conversations simultaneously, at any given time. These Modules provide digitally-controlled matrix-switching - such that calls from particular Nursing Units may be auto-routed to any desired combination of Consoles.
- Audio Amplifier Module(s) – amplify audio signals to appropriate levels for communication between Staff Consoles and their associated Audio / Visual Addressable Stations, as well as providing amplification for group voice-page functions. (1) AAM is required per each Console / Audio Channel

CONTROL UNIT CAPACITIES:

The capacity of each 5500-Series Control Unit is as follows:

Control Unit Model No:	Single Console Models:		Multi-Console Models	
	HTN7647UA	HTN7648UA	HTN7672UA	HTN7674UA
Loops (with Dome Lamps)	1	2	2	4
(without Dome Lamps)	2	2	4	4
Annunciators	3	3	4	4
Console (Any Version)	1	1	2	4
Audio Channels	1	1	2	4
Radio Paging (to pocket pagers)	Y	Y	Y	Y

AUDIO CHANNELS:

Audio Channels are used for talk-path functions associated with Patient, Staff, and Staff / Duty Stations.

Single-Console Controllers are provided with a single Audio Channel

Multi-Console Controllers are provided with either 2 or 4 Audio Channels

Model HTN7672UA is provided with 2 Audio Channels (one per Console)

Model HTN7674UA is provided with 4 Audio Channels (one per Console)

Owners and installers need to be aware of this limitation, and how it affects operation of the system.

Because the Addressable Audio Stations in each Nursing Unit typically share a common Audio Cable and corresponding Channel, only one conversation may occur on each such Audio Channel at any given time.

The following example should help to illustrate how this works:

Example - Facility with: 3 wings - 100-wing, 200-wing and 300-wing
 2 Nurse Stations - Console A and Console B
 HTN7674UC Controller - 1 Loop per wing
 1 corresponding Audio Channel per wing

If a call is placed from Room 202, and is answered at Console A:

Other calls within the 200-wing cannot be answered until Console A hangs-up, because Audio Channel #2 is in use. If Console B attempts to call any room in the 200-wing, they will get a "Busy" message on the Console.

However, if Console B attempts to call any room in the 100-wing or 300-wing during this time, such calls should work without problems.

STAFF CONSOLE(S):

On 5500-Series Nurse Call Systems, Staff Consoles replace Annunciators, as the primary interface between staff members (usually Nursing) and the 5500-Series Nurse Call System.

Staff Consoles operate in a manner similar to an office-type multi-line telephone. Staff Consoles provide functions including, but not limited to the following:

- Alphanumeric display – for visual indication of calls (room of origin and priority), and diagnostic information and other features via English-language text
- LED indicators – for visual indication of waiting / holding calls, system power, and fault status conditions
- A handset / hook-switch assembly, and a speaker / microphone - for answering calls and for regulation of a two-way talk path between each Staff Console and the associated Audio / Visual Addressable Stations.
- A dual-tone sounder – Provides a variety of distinct tones, for Audible indication of various Call Priorities
- Two types of 5500-Series Staff Consoles are available:
 - Standard LCD Type (Model HCN7636UA) – with a single-line, monochrome LCD display [The Tone / Visual version of this Console (Model HCN7638UA) lacks a handset & hookswitch assembly – Refer to previous, “Communicator 5000” portion of this manual.]
 - Touch-Screen Type (Model HCN7637UA) – PC-based unit, with a color, multi-line display

ANNUNCIATORS – MODEL HRN7614UA:

On 5500-Series Nurse Call Systems, Model HRN7614UA Annunciators may also be utilized. However, their role is usually to provide secondary or specialized indication – such as when dedicated Code Blue annunciators are needed in the telecommunications room.

(Refer to the previous section on 5000-Series Nurse Call Systems / Annunciators for more details)

DUTY STATIONS – MODEL HWN7606UA:

Duty Stations may still be utilized where supplementary tone/visual indication is required. However, please note that they do not provide any voice intercom functions.

Be careful of terminology used when analyzing project specifications or competitor equipment lists – Duty, Staff, and Staff / Duty Stations are often used interchangeably. If Intercom-type functions are required, they are probably referring to Staff/Duty or Duty Stations. When used by Cornell, the term “Duty Station”, refers to a Tone / Visual device.

STAFF STATIONS – MODEL HWN7670UC (AND HWN7649UC):

Staff Stations are specialized addressable stations, which are intended to provide communication for Staff Personnel from the Staff Station to one or more Staff Consoles.

Essentially, they are addressable, pushbutton-actuated, staff-use intercom stations. Staff stations are commonly provided within rooms where staff members will occasionally require assistance from other staff members – such as Bath / Tub Rooms in Nursing Homes or Procedure Rooms in Surgical Centers. When actuated, they initiate a Staff Level Call.

Please note that Staff Stations use normal addresses:

- Model HWN7649UC has limited capability to support non-addressable stations
- Although Model HWN7670UC is designated as a “Push-Button Patient Station”, it functions very effectively as a Staff Station, and has fewer limitations.

See the note above with Duty Stations. When used by Cornell, the term “5500 Series Staff Station” refers to a Call Initiating Station without the Duty Station indicators.

STAFF / DUTY STATIONS – MODEL HWN7654UC:

In locations where the functions of both a Duty Station and a Staff Station are needed, Staff / Duty combination stations may be utilized.

Each Staff / Duty Stations provides LED and Tone indication in the same manner as a standard Duty Station (Refer to 5000-Series description), but also adds the Staff Call functions of a Staff Station (see above).

Please note that Staff/Duty Stations use normal addresses, and have limited capability to support non-addressable stations.

- Model HWN7654UC is presently not UL-Listed, and, like the HWN7649UC that it is based on – has limited capability to support non-addressable stations
- Where UL-Listing is required, the following two stations should be paired at each required location:
 - Model HWN7670UC Push-Button Patient Station (Staff Station)
 - Model HWN7606UA Duty Station

See the note above with Duty Stations. When used by Cornell, the term “Staff/Duty Station” refers to a Call Initiating Station combining both Staff and Duty Station features.

ADDRESSABLE STATIONS:

Like the 5000-Series, all Calls that are placed on the 5000-Series Nurse Call System must be passed through an Addressable Station. The 5500 Nurse Call System supports the same Addressable Stations as the 5000-Series, but also adds support for Addressable Audio Stations:

ADDRESSABLE AUDIO STATIONS:

Addressable Audio Stations (Patient Stations and Staff Stations) incorporate the same features as their non-audio counterparts, but also add the following features:

- Audio Talk-Path Connection – which allows Addressable Audio Stations to provide 2-way voice communications, between such stations and their associated Console(s)
- Receptacle for Call-Cord (on Patient Stations) – Addressable Patient Stations with Audio are equipped with one of the following:
 - 20-pin receptacle (Standard Series and Personal Series) - for connection to a Pillow-Speaker type Call Cord
 - 1/4-inch, 3-conductor phone jack (Economy Series) - for connection to a basic push-button type Call Cord.

(Staff Stations and push-button Patient Stations lack such receptacles, but are equipped with a Call pushbutton, which is used to initiate calls at locations where patients are ambulatory, or where calls are customarily placed by facility staff.)

One additional item to note - the Routine Call Output(s) on Addressable Audio Stations is non-programmable, and is linked directly to the Routine Call Input(s) via on-board circuitry. Because of this, Routine Call Outputs MAY NOT be “forwarded” from one station to another via system programming. If a single corridor dome lamp is required for Routine Calls from multiple stations, diodes or custom-programming will be required in most cases.

As in the 5000-Series Systems, non-Addressable Stations must still be connected to the system via an associated addressable station.

INDICATOR LIGHTS / ZONE LIGHTS:

As in the 5000-Series, Indicator Lights must also be driven via an associated Addressable Station. The Communicator 5500 System usually utilizes a standard lamp color scheme, where particular lamp colors and flash patterns are utilized for particular call priorities.

RADIO PAGING INTERFACE:

Like the 5000-Series, 5500 Series Nurse Call Systems may also be interfaced to Cornell's WaveWare paging system. When Radio Paging is utilized in conjunction with the 5500 Series, additional features and capabilities are available

(Refer to Appendix "H" for Multi-Console Controllers)

(Refer to Appendix "J" for Single-Console Controllers)

Paging assignments may be entered at a console, allowing for quick and easy paging assignments per shift (no shifts, 2 X 12-hour shifts, or 3 X 8-hour shifts are the available options). Auto or Manual paging modes are available via a simple series of keystrokes.

SYSTEM DIAGNOSTIC FUNCTIONS:

5500 Nurse Call Systems are equipped with a variety of diagnostic functions – both via the system programming / configuration port, via the Console(s), and via Annunciator(s) if so equipped. Such diagnostic functions aid installers and end-users in identifying the source of problems if and when they occur.

TELEVISION AND LIGHT CONTROL OPTIONS:

Many of the Audio/Visual Patient Stations are provided with connection points for Television Control and Audio and for dual-level lighting controls.

When provided with suitable pillow-speaker type call cords, and when interfaced to suitable hospital-type televisions and to external lighting control modules, such features may be utilized. (Refer to manual sections for A/V Patient Stations for more detailed information.)

AUXILIARY MONITORING RECEPTACLE ON A/V PATIENT STATIONS:

Many of Audio/Visual Patient Stations are provided with an Auxiliary Jack. When so equipped, such jacks are intended for supplemental monitoring of medical equipment – such as out-of-bed alarms, infusion pumps, etc.

(Note: Such jacks are intended for supplemental monitoring only, and are not suitable for critical monitoring. When life-safety monitoring is required for critical-care patients – such monitoring should be performed via suitable means, as recommended by the manufacturer of the equipment being monitored.)

LOW-LEVEL CALLS FEATURE:

When implemented, the Low-Level Calls feature works in conjunction with the Remind feature, and provides a means for staff to deal with low-priority rooms and/or nuisance patients.

Routine Calls from selected stations may temporarily or permanently be re-designated as Low-Level.

When a call that would normally be Routine is placed from such stations, the corresponding call is automatically placed into "Remind" status (see below). (This feature is also available on 5000-Series Systems, when they are equipped with a Console.)

PRIORITY CALLS FEATURE:

When implemented, the Priority Calls feature provides a means for staff to deal with rooms and/or patients that require a slightly higher degree of response attention than Routine calls:

Routine Calls from selected stations may temporarily or permanently be re-designated as Priority Calls.

When a call that would normally be Routine is placed from such stations, Audible and Visual indication of such calls is the same as for a Routine Call, with the following exceptions:

- Priority Calls are displayed before any Routine Calls in the console queue
- The tone for Priority Calls is the same as Routine, but "rings" twice as fast.

(This feature is also available on 5000-Series Systems, when they are equipped with a Console.)

REMINDE FEATURE:

The Remind feature is most frequently associated with Patient Stations - When suitable Stations are provided with suitable Dome Lamps (Usually, containing a Green bulb), the Remind Feature may be utilized.

The Remind feature is usually utilized when Routine or Priority Calls are answered, and are either placed into a "hold" state, or when staff, food, or medications are dispatched to the corresponding room.

In such cases, when staff at the Console places the call on "Remind":

- The Green dome outside such rooms is illuminated
- An asterisk appears on the console display - adjacent to the room number
- The audible tone for remind is actuated at the Console (two quick beeps every 6 seconds)
- At annunciators:
 - Audible notification stops when a call is placed on Remind
 - The LED corresponding to Remind stations blinks twice every 6 seconds.

When the follow-up call occurs, or when the dispatched person arrives at the room, the Remind status condition may be cancelled at the Patient Station, or via a Console.

NURSE FOLLOW FEATURE:

When implemented, the Nurse Follow Feature allows the tones that would normally occur at a Console to be temporarily forwarded to an addressable station with Audio features.

This feature is handy for times when staff need to leave a normally-manned console location for a short time period (usually during low call-volume times, such as evening hours).

Once the calls are forwarded, such forwarding may be cancelled by resetting the corresponding station, or by simply lifting and replacing the handset at the corresponding Console.

SWING UNITS / SWING ROOMS FEATURES:

Multi-Console Controllers support the Swing Units and Swing Rooms features:

SWING UNITS:

This feature allows groups of rooms (entire Nursing Units) that are normally answered at one or more particular Consoles to be temporarily answered at a different Console.

Swing Units is useful for low call-volume times, such as evenings – when it may be possible to reduce staffing by allowing particular consoles to serve multiple nursing units.

SWING BEDS FEATURE:

This feature allows individual rooms (stations) that are normally answered at one or more particular Consoles to be temporarily or permanently answered at a different Console.

This feature is useful for instances where an "overflow" occurs within a particular care unit or department – where a patient is temporarily placed into a room that is normally part of a different care unit. This way, calls from such stations may be answered by the care unit or department to which that patient is assigned – even if they are located in a space that is not normally part of their care unit / department.

It is also useful for instances where a nursing unit contains more than 32 normal station addresses, and a physical data loop needs to be "split" with some rooms reporting to one nursing unit and other rooms reporting to a different nursing unit.

COMMUNICATOR RN EQUIPMENT LIST:

Description				Model No:	5000	5500
CONTROL UNITS:						
*	Control Unit,	32 Station, Tone / Visual	(Cumula 1)	HTN7616UA	X	
*	Control Unit,	64 Station, Tone / Visual	(Cumula 1)	HTN7617UA	X	
#	Control Unit,	128 Station, Tone / Visual	(Cumula 3)	HTN7680UA	X	
*	Control Unit,	32 Station, Single Console	(Cumula 2)	TN7647UA		X
*	Control Unit,	64 Station, Single Console	(Cumula 2)	HTN7648UA		X
#	Control Unit,	64 Station, Multi (2) Console	(Cumula 3)	HTN7672UA		X
#	Control Unit,	128 Station, Multi (4) Console	(Cumula 3)	HTN7674UA		X
*	Back Box for Controllers marked with “*” (above)			HDN6101UA		
	Door for Box Above – For Surface-Mount Applications			HDN6103UA		
	Door for Box Above – For Flush-Mount Applications			HDN6102UA		
#	Back Box for Controllers marked with “#” (above)			HDN7681UA		
	Door for Box Above – For Surface-Mount Applications			HDN7683UA		
	Door for Box Above – For Flush-Mount Applications			HDN7682UA		
SERIAL ISOLATOR & CONVERTER EQUIPMENT:						
	Serial Isolator Device RS-232 to RS-232 (Short Dist)			HXN7665UA	X	X
	Serial Isolator / Converter - RS-232 / RS-422 (DB-25)			HSN7666UA	X	X
	Serial Isolator / Converter - RS-232 / TS-422 (DB-9)			HXN7800AA	X	X
CONSOLES:						
	Nurse Console – Standard LCD Unit			HCN7636UA		X
	Nurse Console – Standard LCD (No Audio)			HCN7638UA	X	
	Nurse Console Touch Screen			HCN7637UA		X
ANNUNCIATOR:						
	Tabular LED Type, 32-LED /		4-Gang	HRN7614UA	X	X
DUTY & STAFF STATIONS:						
	Duty Station, 3 LEDs & Sounder,		2-Gang	HWN7606UA	X	X
	Faceplate for Duty Station (Above) – Stainless Steel			HFN7611UA		
	Staff Call Station,		3-Gang	HWN7649UC		X
	Faceplate for Staff Station (Above) – Stainless Steel			HFN7650UA		
	Staff/Duty Combination Station,		3-Gang	HWN7654UC		X
	Faceplate for Staff/Duty Station (Above) – Stainless Steel			HFN7655UA		

EQUIPMENT LIST (continued)

Description		Model No:	5000	5500
<u>ADDRESSABLE STATIONS – TONE / VISUAL TYPES:</u>				
Patient Station, Standard – Single (Discontinued – Replaced by HWN7630UC)	1-Gang	HWN7600UC	X	X
1-Gang Trim Plate for Patient Station (Above) – Stainless Steel		HFN7601UA		
Patient Station, Standard – With Conn. for Satellite Stn. (Same as HWN7600UC, supports HWN7625 Satellite Station)	1-Gang	HWN7630UC	X	X
1-Gang Trim Plate for Patient Station (Above) – Stainless Steel		HFN7601UA		
Patient Station, Standard – Code Blue Membrane Sw. (Same as HWN7630, Has “Code Blue” Membrane Switch instead of Emergency)	1-Gang	HWN7667UC	X	X
1-Gang Trim Plate for Patient Station (Above) – Stainless Steel		HFN7601UA		
Patient Station, Standard – With 20-Pin Receptacle (20-Pin Receptacle supports TV Audio / Light Switches Only – does not support Intercom Functions)	2-Gang	HWN7017UC	X	X
Faceplate for Patient Station (Above) – Stainless Steel		HFN7016UA		
Patient Station, Economy Series, Single, 1-Piece Assy.	2-Gang	HWN7668UC	X	X
Patient Station, Economy Series, Dual, 1-Piece Assy.	3-Gang	HWN7678UC	X	X
Smart Station, Emergency Membrane Switch	1-Gang	HWN7619UC	X	X
1-Gang Trim Plate for Pushbutton Station (Above) – Stainless		HFN7601UA		
Smart Station, Code Blue Membrane Switch	1-Gang	HWN7620UC	X	X
1-Gang Trim Plate for Pushbutton Station (Above) – Stainless		HFN7601UA		
Smart Station (designed for concealed mount)	1-Gang	HWN7628UC	X	X
<u>ADDRESSABLE PATIENT STATIONS – AUDIO / VISUAL TYPES:</u>				
Standard Series – 20-Pin Receptacle, Membrane Switch, Faceplate Speaker				
Single – includes Siderail Interface -	3-Gang	HWN7633UC		X
Faceplate for Patient Station Above – Stainless Steel		HFN7635UA		
Dual Patient Unit -	4-Gang	HWN7643UC		X
Faceplate for Patient Station Above – Stainless Steel		HFN7646UA		
Dual Patient Unit, plus Siderail Interface -	4-Gang	HWN7653UC		X
Faceplate for Patient Station Above – Stainless Steel		HFN7646UA		
Personal Series – 20-Pin Receptacle, Membrane Switch (Audio via Pillow Speaker Only)				
Single -	2-Gang	HWN7631UC		X
Faceplate for Patient Station Above – Stainless Steel		HFN7639UA		
Dual Patient Unit -	3-Gang	HWN7641UC		X
Faceplate for Patient Station Above – Stainless Steel		HFN7644UA		
Dual Patient Unit, plus Siderail Interface -	3-Gang	HWN7651UC		X
Faceplate for Patient Station Above – Stainless Steel		HFN7644UA		
Economy Series – ¼-inch Phone Jack, Mech. Reset Switch (Audio via Faceplate Speaker Only)				
Single -	2-Gang	HWN7669UC		X
Single – Pushbutton (no jack for call cord)	2-Gang	HWN7670UC		X
Dual Patient Unit -	3-Gang	HWN7679UC		X
(Economy Series are 1-Piece Assemblies – Separate Faceplates are not required for these)				

EQUIPMENT LIST (continued)

Description	Model No:	5000	5500
<u>NON-ADDRESSABLE STATIONS:</u>			
Satellite Station, 1/4-inch Phone Jack on Stainless Plate	1-Gang HWN7624UA	X	
Satellite Station, Membrane Switch Style,	1-Gang HWN7625UA	X	
1-Gang Trim Plate for Pushbutton Station (Above) – Stainless	HFN7601UA		
Pull Cord Emergency, Membrane Switch Style,	1-Gang HWN7605UA	X	X
1-Gang Trim Plate for Emergency Station (Above) – Stainless	HFN7601UA		
Pull Cord Emergency, Economy Series, 1-Piece Assy (Replaces HWN7652UA)	1-Gang E-7652	X	X
Pull Cord Emergency, Economy, 1-Piece, Water-Resist (Replaces HWN7657UA – Same as above, Includes additional Gasket)	1-Gang E-7657	X	X
Remote Reset Station, Momentary Switch on S.S. Plate (Discontinued - Use Cornell C-913 Switch instead)	1-Gang HWN7691UA	X	X
Membrane Switch - Emergency (Also Replaces HWN7604UA - Includes both "Emergency" & "Code Blue" Label Inserts)	1-Gang HWN7602UA	X	X
1-Gang Trim Plate for Pushbutton Station (Above) – Stainless	HFN7601UA		
Membrane Switch – Staff In / Out (Discontinued – Replaced by HWN7602UA)	1-Gang HWN7603UA	X	X
Membrane Switch – Code Blue (Discontinued – Replaced by HWN7602UA)	1-Gang HWN7604UA	X	X
<u>DOME LIGHTS – 3-GANG SIZE:</u>			
With 1 Bulb (WHT, unless specified otherwise)	HWN6691UA	X	X
With 3 Bulbs (WHT, GRN, RED, unless specified otherwise)	HWN6693UA	X	X
With 5 Bulb (WHT, GRN, RED, YEL, BLU)	HWN6695UA	X	X
<u>CALL CORDS WITH 3-CONDUCTOR (TRS-TYPE) PHONE PLUG:</u>			
Single Pushbutton, 8-Foot Cable	HAN7608UA	X	X
Dual Pushbuttons to single plug	HAN7609UA	X	X
<u>PILLOW SPEAKER CALL CORDS WITH 20-PIN CORNELL / HCE / SYLVANIA PLUG:</u>			
Basic – Call Button & Speaker	HSN6532UA		X
Basic & TV – Above plus Volume & Channel Control	HSN6527UB		X
Basic, TV & Light Control – Above plus (2) light controls	SP82248701		X
No Speaker – Basic Pushbutton with 20-pin Plug, 8-foot	HAN7686AA		X

SYSTEM DIAGRAMS:

Refer to the individual Device Installation and Service Guides (ISGs) or to the Equipment Drawing Section of this Communicator RN Service Manual for wiring diagrams of typical installations of the Communicator Nurse Call system.

Drawing Number “5500-Wire”, as found near the end of this Reference Guide, may be used to plan for system wiring and installation requirements.

HARDWARE, SOFTWARE, AND FIELD REPLACEABLE PARTS:

Applicable hardware and software information is included in the Device Installation and Service Guides. A list of field replaceable parts is included in the Appendix section of this manual

SYSTEM PLANNING:

INTRODUCTION:

This section covers the initial planning of a Communicator RN installation and includes information pertaining to power, cable, back box, and tool requirements. Other information helpful in the planning and layout of a typical Communicator RN Nurse Call System is also provided.

CONFIGURATION OF THE SYSTEM:

Properly configuring a Communicator RN System requires detailed information about the facility where the system will be installed, plus a thorough understanding of the system architecture.

The following steps and examples are a good starting point. However, keep in mind that code requirements vary considerably from one locality to another. Because of this, the system designer will need detailed knowledge of the actual building and/or health department code requirements within the area where the facility is located.

Step 1 – General Layout of Facility / Nursing Units:

The first task of planning a system is to take a “big-picture” look at the facility, and break it into manageable partitions, which will usually be Nursing Units or Departments – particularly if the facility is relatively large. In some facilities, it is relatively obvious as to which portions of the facility are monitored at which staff locations / Nurse Desks. At other times, it may not be obvious – When in doubt, get clarification and do it early, so that the decision & documentation process does not impact construction:

If the job is a Plan & Specification job - Submit written RFI (Request For Information), through proper construction project channels.

If the job is Design / Build – Coordinate a primary contact person with the facility owner. All correspondence and discussions between the installer and the owner need to be routed through this person. This person needs to be either empowered to make decisions, or needs to work closely with the owner personnel who are.

In the “Design” or “Pre-Installation” phase of the project, it is usually a good idea to convene a meeting with relevant groups represented.

An “agenda” document, circulated ahead of time, will allow preparation for the discussion – it will also help in getting the correct people to show-up, and will keep the discussions focused.

Afterward, it is also highly advisable to circulate “minutes” – itemizing each issue and the conclusion to each issue and/or who is in charge of any subsequent follow-up actions.

It may be possible to have the local Authority Having Jurisdiction (Health Department Inspector / Examiner, etc.) perform an “informal” preliminary review of your plans before installation. The Owner will usually know who this person is / how to contact them. Such reviews may allow potential mistakes / interpretation issues to be addressed before installation of the equipment. This will usually reduce the chances of inspection and/or post-installation problems.

Steps 2 & 3 – Break-Down each Nursing Unit:

The next steps in planning a system are to

- Examine each Care Unit
- Classify each different “Space” configuration, where Nurse Call equipment will be required. (There is no need to note areas where Nurse Call equipment will not be required.)

This will usually depend upon the type of facility. At this point, do not look only at individual rooms – rather, look at typical “units” (the reason for this will become more clear later).

A simple take-off by item / part – with total quantities of each type of station, does not lend itself to layout of Communicator RN Systems. In order to be effective, your “take-off” needs to allow items to be “grouped” together, for each typical type of room. Your “take-off” and also needs to be grouped by Nursing Unit, in order to ensure that addressable loop capacities are not exceeded, etc.

First, consider which spaces will primarily be used by Patients, by Staff, by the Public, and possible Utility Locations that are accessible for wiring and where it may be acceptable to install the controller.

Next, break-down each such space into the typical sub-categories within each usage category – it is usually advisable to note the quantity of areas / rooms in each such sub-category.

The following are examples of typical facility types commonly encountered by Cornell – they should help to illustrate the types of information that are needed:

EXAMPLE “A”: FACILITY = NURSING HOME / HOSPITAL:

- Areas that are primarily Patient-Use:
 - How many Private Rooms with Private Bathroom are there?
 - How many Private Rooms, that share a Bathroom between them, are there?
 - How many Semi-Private Rooms are there?
 - How many stand-alone / visitor-use Toilets are there?
 - Describe any other typical Patient Room Layout & quantify each (Lounge area, etc.)
- Areas where Patients will usually be under direct supervision by Staff Members:
 - How many Tub Rooms – for patients that need help with bathing?
 - How many Treatment / Therapy Rooms?
 - How many Dining / Activity Areas are there (note any associated bathrooms)?
 - Describe any other typical Supervised Patient-Use area & quantify each
- Areas that are primarily dedicated to Staff Use only (when they are “On-Duty”):
 - Qty of Nurse Stations? (They will usually require annunciators / consoles)
 - Qty of Medical Supply Rooms? (They will often require Duty Stations)
 - Qty of Staff Break Room(s)? (They will often require Duty Stations)
 - Qty of Clean & Soiled Storage / Linens? (They will often require Duty Stations)
 - Qty of Certain Staff Offices? (Some may require Duty Stations)
 - Describe any other typical Staff-Use area requiring equipment & quantify each
- Utility Areas – possible location(s) for Control Unit location(s). It is typically best to coordinate one that is central to the area served by each separate system.
 - Electrical Room(s)
 - Mechanical Room(s)
 - Telecommunications / Data Equipment Room(s)
 - Janitorial closets / Supply rooms, etc.

EXAMPLE “B”: FACILITY = ASSISTED LIVING / ELDERLY HOUSING:

- Areas that are primarily Resident-Use:
 - How many 1-Bedroom Dwelling Units?
 - How many 2-Bedroom Dwelling Units?
 - How many Dining / Lounge / Activity Rooms are there & note attached or stand-alone bathrooms (if resident use is unsupervised)
 - Describe any other typical Resident-Access Room Layout & quantify each

- Areas where Residents will usually be under direct supervision by Staff Members:
 - How many Treatment Rooms
 - Qty of Dining Areas (and any associated Bathrooms – note such associations)
 - Qty of Activity Areas (and any associated Bathrooms – note such associations)
 - Lobby(s) where Annunciator(s) will be provided for responding personnel
 - Describe any other typical Supervised Patient-Use area & quantify each
- Areas that are primarily dedicated to Staff Use only (when they are “On-Duty”):
(Requirements for these areas is usually not as stringent as within Nursing Homes)
 - Manager’s / On-Duty Personnel Apartment
 - Manager’s / On-Duty Personnel Office(s)
- Utility Areas – possible location(s) for Control Unit location(s). It is typically best to coordinate one that is central to the area served by each separate system.
 - Same as for Nursing Homes (see above)

EXAMPLE “C”: FACILITY = OUTPATIENT SURGICAL CENTER:

- Areas where patients may be left alone for periods of time:
 - How many Pre-Op / Preparation Rooms / Stalls are there?
 - How many Post-Op / Recovery Rooms / Stalls are there?
 - How many Dressing Rooms are there?
 - Describe any other primarily Patient-Access Room Layouts & quantify each
- Areas where Residents will usually be under direct supervision by Staff Members:
 - How many Procedure Rooms / Operating Rooms are there?
 - How many X-ray / Imaging Rooms are there?
 - Describe any other typical Supervised Patient-Use area & quantify each
- Areas that are primarily dedicated to Staff Use only (when they are “On-Duty”):
 - How many Nurse Desks are there? (Are any dedicated to Pre-Op or Post-Op?)
 - Describe any other typical Supervised Patient-Use area & quantify each
- Utility Areas – possible location(s) for Control Unit location(s). It is typically best to coordinate one that is central to the area served by each separate system.
 - Same as for Nursing Homes (see above)

EXAMPLE “D”: FACILITY = CLINIC:

- Areas where patients may be left alone for periods of time:
 - How many Examination Rooms are there?
 - How many Patient-use Bathrooms / Toilets are there?
 - How many Dressing Rooms are there?
 - Describe any other primarily Patient-Access Room Layouts & quantify each
- Areas where Residents will usually be under direct supervision by Staff Members:
 - How many Procedure Rooms / Operating Rooms are there?
 - How many X-ray / Imaging Rooms are there?
 - Describe any other typical Supervised Patient-Use area & quantify each
- Areas that are primarily dedicated to Staff Use only (when they are “On-Duty”):
 - How many Nurse Desks are there? (Are any dedicated to Pre-Op or Post-Op?)
 - Describe any other typical Supervised Patient-Use area & quantify each
- Utility Areas – possible location(s) for Control Unit location(s). It is typically best to coordinate one that is central to the area served by each separate system.
 - Same as for Nursing Homes (see above)

Step 4 – Determine the type of System to use within each Unit:

Now is a good time to determine if the system within each Care Unit should be Visual (Tone/Visual) or Audio/Visual.

If the project is bid per plans & specifications, the answer to this matter should be found within the specifications and/or where the equipment is specified.

If the project is Design / Build or negotiated directly with the owner, this question should be asked early in the process, if the local Code requirements are not clear (you should research this first).

For systems where this choice is up to you and the end-user, consider the following for your discussions:

Visual (Tone / Visual) is a good choice for systems where:

- Low call volume is expected (a call or two, separated by long spans of inactivity). In such cases, sending Care Staff to the room does not place a big demand on staffing.
- Patients generally have poor hearing (Care Staff will probably have to go to the room anyway).
- There will not be manned locations (Console / Nurse Desk) from which to answer calls

Audio / Visual is a good choice for systems where:

- Patient and/or Staff Station Users generally have acceptable hearing. (If the users will be unable to hear sounds emanating from the stations, then there is no point in providing an A/V System.)
- A staffed location (Console at Nurse / Reception / Security Desk) will exist during normal hours. If no one is available to answer intercom-type calls, then an A/V System is usually a poor choice.
- Staff efficiency is an important consideration – Using the Intercom features, Care Staff may be able to determine what the Patient needs, and can “save trips” by dispatching appropriate personnel or services (food / medications) in order to effectively provide assistance.

Sometimes, Visual will work best in some units, while A/V works best in other units – where this is the case, plan to do one or more of the following:

- Use Multiple, separate Controllers for the Visual and A/V Systems
- Use a larger A/V Controller, and plan to “split” it in a logical manner, with Loops, Consoles, Annunciators designated for each Care Unit. (There is no problem with using Tone / Visual Stations on an Audio / Visual Controller – simply omit the Audio Channel connection to such stations.)

Step 5 – Is U.L. (Underwriters Laboratories, Inc.) Listing Required:

Only some (not all) of the 5000 / 5500 Nurse Call System components are currently U.L. Listed.

Where U.L. Listing is required for the Nurse Call System – either by local Code, or per the Project Specifications, contact your Cornell Sales representative for current listing information / assistance.

Also Note – Where U.L. Listing will be required, it is important to utilize U.L. Listed back boxes for all stations, and for all wiring splices.

Step 6 – Determine Patient Station Series:

If any of the Care Units will be served by an Audio / Visual System, it is advised to look into the specific type of Patient Station(s) (if any) that will be required:

Some important considerations that will help you make this determination are as follows:

- If the project is retrofit – this decision may be partly based on the existing wall opening (1, 2, 3, or 4-gang) – consult the charts at the end of this document for which stations fit which sizes
- If the system will be Visual (Tone / Visual), then determine if the Standard or Economy Series Patient Stations will be used:
 - Standard Series utilize membrane switches and fit single-gang openings, plus they require a separately-purchased faceplate. Will the membrane switches be desired? Are aesthetics important? If the answer to either of the preceding questions is “yes”, then the Standard Series is most likely the correct choice.
 - Economy Series utilize a mechanical “Reset” switch and come in either 2-gang (single-patient) or 3-gang (dual-patient) sizes. If a bare-bones system is required, or if re-using existing 2 or 3-gang openings, then the Economy Series is likely to present the correct choice.

- If the system will be Audio / Visual, then determine if the Standard, Personal, or Economy Series. The following information / questions should assist in this decision:
 - Will faceplate speakers create “privacy” problems? This is important where beds in adjoining rooms share a common wall -- Depending upon placement and upon soundproofing / wall construction, sound may penetrate between the rooms. If this is the case, Pillow-Speaker types may be a better choice, or Economy Series Stations will need to be applied carefully.
 - Will TV and/or Lighting Control be required via the Call Cord? If “yes”, then Patient Stations with 20-pin receptacles will be needed, and suitable Pillow Speaker type call-cords will be required for them. If lighting control will be required, suitable 3rd-party lighting control modules / relays will be needed. (Consult the charts at the end of this document for which stations incorporate which features.)
 - Some facilities, like Out-Patient Surgery Centers, often utilize Visual Patient Stations, and only need Audio in Procedure Rooms and certain Staff Locations for internal staff communications. In such cases, plan to utilize Staff Stations and/or Staff/Duty Combination Stations in locations where audio will be needed.

A “Back box and Features Guide” has been included near the end of this document, to aid you in deciding.

Step 7 – Pick the correct combination of Stations for each scenario: **(Per the Space / Room Types Identified in Steps 2 & 3)**

Laying-out a 5000 or 5500 Nurse Call System requires adequate product knowledge. However, when picking the actual part numbers / equipment – it pays to lay-out the system in this manner. Cornell recommends assembling a take-off sheet, as follows:

- Make-up a separate “take-off” chart for each Care Unit, or a separate section
- List the typical room / space configurations vertically
- List the equipment items horizontally (be sure to include any faceplates / accessory items)

Experience with the system will allow you to exploit the use of non-addressable stations in a logical manner.

EXAMPLE (REFER TO TABLE ON THE FOLLOWING PAGE):

The chart on the following page shows an example of a 5500 Nurse Call System within a Nursing Home, with (3) Wings – each wing is a separate Nursing Unit (for room types, refer to “Example A” from page 15).

On the chart, please note the following:

- All equipment types that are available have been listed - Only those that would normally be used for a Nursing Home type facility have been listed. Several equipment “Selection Guides” have been provided at the end of this document to aid you in deciding which equipment to use.
- “A-Wing” Patient Rooms are all private rooms, each with its own bathroom
- “B-Wing” Patient Rooms are a mix of Private rooms with shared bathrooms, and Semi-Private rooms. In the Semi-Private Rooms, Dual Patient Stations have been utilized – each of them requires (2) call-cords
- “B-Wing” is central, and contains the Dining Room and the Controller.
- 3-bulb Dome Lamps work best for most Patient Rooms: White = Routine, Red = Bath & Cord-Out, plus Green = Remind. (Refer to the “Dome Lamp Selection Guide”, as found at the end of this document.)
- Stand-Alone Bathrooms and Emergency Stations usually only require Single-Bulb Dome Lamps, since only a single status condition is normally indicated for such locations.
- In most cases, Staff and Staff/Duty Stations do not require Dome Lamps. In this particular case, 3-Bulb Lamps have been provided for Tub Rooms: White = Staff Call, Red = Emergency, 3rd Bulb = not used.
- Due to mounting of their internal switch - Stand-Alone, Addressable Bath (Pull-Cord) Stations are unavailable for the 5000/5500 Nurse Call System. Some sort of addressable station is needed for each.
- Smart Stations support up to (4) Non-Addressable Stations and (4) associated Single-Bulb Dome Lamps, when they are all located within a relatively small area. The stand-alone bathrooms (Men & Women) are adjacent to each other, and each such pair can be served by a single Smart Station.
- The (3) Non-Addressable Emergency Pushbutton Stations in B-Wing may either be paralleled together as a single point, or may each be identified separately via the associated smart station. Either way, a single Dome Lamp has been estimated for this room.

STATION TYPE: →		PATIENT STN. - ECON - SINGLE	PATIENT STN. - ECON - DUAL	CALL-CORD	NON-ADD. BATH STN - ECON	SMART STATION	STAFF STATION	NON-A EMERG. PUSHBUTTON	DUTY STATION	1-BULB DOME LAMP	3-BULB DOME LAMP	CONSOLE - STANDARD	CONTROLLER
A-WING	Priv. Room / Priv. Bath	20	0	20	20	0	0	0	0	0	20	0	0
	2 Priv. Room / Share Bath	0	0	0	0	0	0	0	0	0	0	0	0
	Semi-Priv. Rm	0	0	0	0	0	0	0	0	0	0	0	0
	Stand-Alone Toilet	0	0	0	2	1	0	0	0	2	0	0	0
	Tub Room	0	0	0	1	0	1	0	0	0	1	0	0
	Treatment Rm.	0	0	0	0	0	1	0	0	0	0	0	0
	Dining Room	0	0	0	0	0	0	0	0	0	0	0	0
	Nurse Station	0	0	0	0	0	0	0	0	0	0	1	0
	Meds Room	0	0	0	0	0	0	0	1	0	0	0	0
	Staff Break Rm	0	0	0	0	0	0	0	1	0	0	0	0
	Dirt/Clean Linen	0	0	0	0	0	0	0	2	0	0	0	0
	Electrical Rm.	0	0	0	0	0	0	0	0	0	0	0	0
B-WING	Priv. Room / Priv. Bath	0	0	0	0	0	0	0	0	0	0	0	0
	2 Priv. Room / Share Bath	12	0	12	6	0	0	0	0	6	6	0	0
	Semi-Priv. Rm	0	8	16	8	0	0	0	0	0	8	0	0
	Stand-Alone Toilet	0	0	0	2	1	0	0	0	0	0	0	0
	Tub Room	0	0	0	1	0	1	0	0	0	1	0	0
	Treatment Rm.	0	0	0	0	0	1	0	0	0	0	0	0
	Dining Room	0	0	0	0	0	1	3	1	0	1	0	0
	Nurse Station	0	0	0	0	0	0	0	0	0	0	1	0
	Meds Room	0	0	0	0	0	0	0	1	0	0	0	0
	Staff Break Rm	0	0	0	0	0	0	0	1	0	0	0	0
	Dirt/Clean Linen	0	0	0	0	0	0	0	2	0	0	0	0
	Electrical Rm.	0	0	0	0	0	0	0	0	0	0	0	1
C-WING	Priv. Room / Priv. Bath	0	0	0	0	0	0	0	0	0	0	0	0
	2 Priv. Room / Share Bath	0	0	0	0	0	0	0	0	0	0	0	0
	Semi-Priv. Rm	0	16	32	16	0	0	0	0	0	0	0	0
	Stand-Alone Toilet	0	0	0	2	1	0	0	0	0	0	0	0
	Tub Room	0	0	0	1	0	1	0	0	0	1	0	0
	Treatment Rm.	0	0	0	0	0	1	0	0	0	0	0	0
	Dining Room	0	0	0	0	0	0	0	0	0	0	0	0
	Nurse Station	0	0	0	0	0	0	0	0	0	0	1	0
	Meds Room	0	0	0	0	0	0	0	1	0	0	0	0
	Staff Break Rm	0	0	0	0	0	0	0	1	0	0	0	0
	Dirt/Clean Linen	0	0	0	0	0	0	0	2	0	0	0	0
	Electrical Rm.	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS →		32	24	80	59	3	7	3	13	8	38	3	1

Step 8 – List the Model Numbers for each Required Field Device:**Step 9 – List any Accessory Items / Faceplates Required for each Field Device:**

This may be done on the take-off chart, as assembled in Step 6, or may be done separately.

Product knowledge, acquired over time, is the best way to perform these steps. In most cases, installers or contractors could consider forwarding copies of their detailed take-off sheets to Cornell Sales Representatives, who could prepare a quotation based upon this information.

If a contractor / installer was attempting to do these steps for themselves, the information required may be obtained from sources that include, but are not limited to the following sources:

- Previously within this Reference Guide document – consult the Equipment List (for some equipment items, only a single Model Number is available)
- Cornell Product Data Sheets – These may be found on the Cornell website www.cornell.com or within other Cornell Sales Literature (Contact your Cornell representative).
- Faceplate Model Numbers may be found on the cover sheet of the Installation and Service Guide (ISG) for each equipment item. These ISGs are compiled into the Cornell Installation & Service Manual (large, 3-ring binder) for the Communicator RN Nurse Call System. (Each ISG is one “Tab” within the binder.)

EXAMPLE:

The totals, sub-totals by Wing, and descriptions from the take-off chart (see previous page) are as follows (Items noted with an asterisk “*” denote Addressable Devices):

REF	TOT	A	B	C	Description
*A	(32)	20	12	0	Patient Station – Economy Series - Single
*B	(24)	0	8	16	Patient Station – Economy Series – Dual
C	(80)	20	28	32	Call Cord for Patient Stations
D	(59)	23	17	19	Bathroom Emergency Station – Economy Series
*E	(3)	1	1	1	Smart Station (for Stand-Alone Toilets)
*F	(7)	2	3	2	Staff Station (for Tub & Treatment Rooms)
G	(3)	0	3	0	Non-Addressable Emergency Pushbutton Station (Dining Rm.)
H	(13)	4	5	4	Duty Stations
I	(8)	2	6	0	Dome Lamp – Single-Bulb
J	(38)	21	16	1	Dome Lamp – 3-Bulb
K	(3)	1	1	1	Consoles (1 at each Nurse Desk)
L	(1)	0	1	0	Controller (Install in Wing B Electrical Rm)
*	65	23	23	19	Addressable Devices (does not include Duty Stations)

REFERENCE (FOR EXAMPLE ABOVE) – LETTERS AT LEFT CORRESPOND TO “REF” COLUMN:
(Refer to the “Equipment List” as found on pages 11 through 13 of this Reference Guide.)

- Patient Stations, Single – In this case, it is assumed that Audio features will be used primarily by Care Staff. Choose Model HWN7669UC Economy Series for simplicity and cost. A separate Faceplate is not required.
- Patient Stations, Dual – Use Model HWN7679UC for the Economy Series (Similar to “A”)
- Call Cord – The Economy Series stations have a ¼-inch TRS-Type Phone Jack. The Call Cord that corresponds to this is Model HAN7608UA (Two are required for each “B” Station)
- Bath Emergency Station – Select Model E-7652 Economy Series, for simplicity and cost. (The Membrane Switch version is more costly and would require a separate Faceplate.)
- Smart Station – Use Model HWN7628UC for the Smart Station. These are typically hidden behind one side of one of the Dome Lamps, or a single-gang opening with a blank cover, which would be obtained separately from a non-Cornell source
- Staff Station – In this case, Model HWN7670 was selected. Although it is technically classified as a “Pushbutton Patient Station” (it uses the same electronics as Model HWN7669UC), it will work well for its intended purpose. Additionally, it is less costly than / does not have the Input / Output limitations of Model HWN7649UC, which would also require a separate Faceplate.

- G. Emergency Pushbutton Station – Use Model HWN7602UA, with the included “Emergency” Label Insert. A Single-Gang Trim Plate – Model HFN7601UA, will also be required for each of them.
- H. Duty Station – Use Model HWN7606UA with Model HFN7611UA Faceplate
- I. Dome Lamp, Single-Bulb – Use Model HWN6691UA. Since all of these are being used for Stand-Alone Bathrooms, Specify “Color = RED” in order to match the function of the multi-bulb units (see below, and also see “Dome Lamp Selection Guide” near the end of this document.
- J. Dome Lamp, 3-Bulb – Use Model HWN6693UA. None of the rooms listed will require more than (3) different Call Status Indications. The standard color scheme is as follows:
- WHT = Routine Call from Patient Stations / Staff Call for Staff Stations
 RED = Emergency, Cord-Out, and Bath (Emergency / Cord Out = Fast Flash, Bath = Slow)
 GRN = Remind feature for Patient Stations
- K. Consoles – In this case, for simplicity and durability, Model HCN7636UA was selected. One will be configured for each Nursing Unit.
- L. Controller – Several factors need to be considered in selecting the correct Controller(s) for a project. In this case, the following factors were examined:
- L1. A Single Controller, or sharing a controller between multiple Care Units is usually the most cost-effective solution – so the following additional factors were checked:
- L2. Number of Consoles – This project requires (3) Consoles. The only Controller that can support this is Model HTN7674UC
- L3. The total number of Addressable Devices planned is 65. Model HTN7674UC can handle up to 128 Addressable Devices. This allows some “headroom” / room for future expansion.
- L4. The total number of Addressable Devices in each Nursing Unit does not exceed 32, and the number of Duty Stations within each Nursing Unit does not exceed 8. This allows each Nursing Unit to be served by a single “Loop” Data Circuit (Polled Loop). It is relatively easy to configure Model HTN7674UC controller for each “Loop” corresponding to a single Console – as if it were four separate, small systems. This leaves “surplus” capacity of one additional console and one Loop – an entire Free-Standing Nursing Unit could be added in the future.

Therefore, Select Controller Model Number HTN7674UC

The proper Back Box to use with this Controller is Model HDN7681UA

Since the Controller is being installed out of sight, in an Electrical Room; surface-mounting with exposed conduits is usually acceptable. In this case, select Door Model HDN7683UA for it.

For this example, the resulting Equipment List for the project would be as follows:

REF	QTY:	MODEL:	DESCRIPTION:
*A	(32)	HWN7669UC	Patient Station – Economy Series - Single
*B	(24)	HWN7679UC	Patient Station – Economy Series – Dual
C	(80)	HAN7608UA	Call Cord for Patient Stations
D	(59)	E-7652	Bathroom Emergency Station – Economy Series
*E	(3)	HWN7628UC	Smart Station (for Stand-Alone Toilets)
*F	(7)	HWN7670UC	Staff Station (for Tub & Treatment Rooms)
G	(3)	HWN7602UA	Non-Addressable Emergency Pushbutton Station (Dining Rm.)
	(3)	HFN7601UA	1-Gang Trim Plate for Item “G”
H	(13)	HWN7606UA	Duty Stations
	(13)	HFN7611UA	Faceplate for Duty Station
I	(8)	HWN6691UA	Dome Lamp – Single-Bulb (Note: “RED”)
J	(38)	HWN6693UA	Dome Lamp – 3-Bulb
K	(3)	HCN7636UA	Console – Standard LCD Unit (1 per Nurse Desk)
L	(1)	HTN7674UC	Controller, A/V, Multi-Console (4 Consoles / 4 Loops)
	(1)	HDN7681UA	Cabinet for Controller
	(1)	HDN7683UA	Door Assembly – Surface-Mount Version

Step 10 - Verify Maximum Wire-Run Distances:

It is important to ensure that the maximum cable-run distances will not be exceeded. In order to verify this safely, you will need one or more of the following:

- Scaled drawings of the facility, where the planned wire runs can be marked and measured.
- Familiarity with the facility, and fairly accurate estimated distances
- Dimensions / Distances measured in the field

AS STATED ON DRAWING "5500-WIRE", THE DISTANCE LIMITATIONS ARE AS FOLLOWS:

▪ **CORRIDOR CABLES + ROOM CABLES = 1000 FEET TOTAL, PER "LOOP"**

Corridor Cables = Feed / Buss, from Controller to the Group of Stations served by each "Loop"

Room Cables = Individual "Drops" from each Addressable Station to the Junction with the Corridor Cables (Typ. spliced at / near to the Dome Lamp, outside each room.)

Example: Corridor with 16 Patient Stations is 100 feet long / average run from each dome light to the patient station is 30 feet, then the total cable lengths is $(16 \times 30) + 100 = 580$ feet.

The Corridor & Room Cables serving each Loop may be split into two runs, with each starting at the Controller – but the total length of all wiring for both runs still cannot exceed 1000 feet.

▪ **NON-ADDRESSABLE STATION CABLES = APPROX. 100 FEET PER STATION**

Non-Addressable Station cables usually consist of a home-run between the station (and it's associated Dome Light), and the Addressable Station to which it is connected.

▪ **NURSE CONSOLE CABLES = 250 FEET, MAXIMUM, PER CONSOLE**

Nurse Console cables usually consist of a home-run, between each Console and the Controller.

▪ **ANNUNCIATOR CABLES = 600 FEET, MAXIMUM, PER ANNUNCIATOR**

Annunciator Cables consist of a home-run, between each Annunciator and the Controller.

If any of the above methods suggests that any of the maximum allowed distances may be exceeded, Cornell suggests evaluating the feasibility of one or more of the following:

- Re-locate the Controller equipment to a more advantageous location. (You may need to obtain permission from the Engineer or Facility Owner before this can be finalized.)
- Split a large system into two or more independent, smaller systems, with the Controller equipment placed in a centralized location for the area that it serves.
- Look into using a different Cornell System for the project, or for any Care Unit that is at the root of the limitation issue.
- Consult with your Cornell representative for assistance

CABLE DESCRIPTION

REFER TO DRAWING "5500-WIRE", AS FOUND NEAR THE END OF THIS DOCUMENT

Be sure to review the Installation and Service Guides for all devices, which include descriptive information and diagrams pertaining to wire termination and system layout that will affect cable selection

Notes: *The listed cables are selected specifically for the application.*

Cornell Series 5000 & 5500 Nurse Call Systems are classified as Class 2 Systems per the NEC (National Electrical Code / NFPA-70). Because of this, any substituted cables must meet NEC requirements as CLASS 2 cables. They should also be suitable for their application (plenum, riser, or non-plenum, etc.).

Some recommended choices for the various cables are as follows:

(Belden Numbers are listed here, because most other manufacturers cross-reference to Belden)

C = CORRIDOR CABLES:

Consists of (3) Separate Cables (Omit Audio for Tone/Visual System)

BELDEN NUMBERS:

NON-:

USAGE: CONSTRUCTION:

POWER #16 AWG 4-COND NO SHIELD

DATA #22 AWG 1-PAIR, TWISTED, SHIELDED (LOW-CAPAC.)

AUDIO #22 AWG 1-PAIR, TWIDTED, SHIELDED (Analog Audio)

PLENUM: PLENUM:

5202UG 6202UE

9414 6500FC

9462 6500FC

R = ROOM CABLES:

Consists of (3) or (4) Separate Cables (Omit Audio for Tone/Visual System)

BELDEN NUMBERS:

NON-:

USAGE: CONSTRUCTION:

* POWER #22 AWG 4-COND NO SHIELD

DATA #22 AWG 1-PAIR, TWISTED, SHIELDED (LOW-CAPAC.)

AUDIO #22 AWG 1-PAIR, TWIDTED, SHIELDED (Analog Audio)

* DOME LT #22 AWG 1 Additional Conductor Per Bulb Used (See other #22 AWG Cables)

PLENUM: PLENUM:

5502UG 6502UE

9414 6500FC

9462 6500FC

* NOTE: Power and Dome Light Cables may be combined into a single, multi-conductor cable

X = NON-ADDRESSABLE STATION CABLE:

USAGE: CONSTRUCTION:

#22 AWG 6-COND NO SHIELD

NON-:

PLENUM: PLENUM:

5504UE 6504UE

N = NURSE CONSOLE CABLES:

Consists of (3) Separate Cables

BELDEN NUMBERS:

NON-:

USAGE: CONSTRUCTION:

PWR/COM #22 AWG 10-COND NO SHIELD

DATA #22 AWG 2 TWISTED PAIRS, SEPARATE SHIELDS

AUDIO #22 AWG 2 TWISTED PAIRS, SEPARATE SHIELDS

PLENUM: PLENUM:

5508UE 6508UE

8723 82723

8723 82723

NOTE: The following single cable may be used in place of the three cables above:

N #22 AWG 9 TWISTED PAIRS, SEPARATE SHIELDS 8774 (none)

A = ANNUNCIATOR CABLES:

Consists of (3) Separate Cables

BELDEN NUMBERS:

NON-:

USAGE: CONSTRUCTION:

DAT/CLK #22 AWG 3 TWISTED PAIRS, NO SHIELD (LOW-CAPAC.)

POWER #22 AWG 4-COND NO SHIELD

PLENUM: PLENUM:

5542UE 6542UE

5502UG 6502UE

2C = 2-CONDUCTOR CABLE, WHERE NEEDED FOR DOME LAMPS, ETC:

USAGE: CONSTRUCTION:

MISC #22 AWG 2-COND NO SHIELD

NON-:

PLENUM: PLENUM:

5500UG 6500UE

OTHER CABLE SELECTION NOTES:

C1. Cornell suggests that the "Data" and "Audio" cables for C & R above should be selected with different jacket colors or Color-Striping. This reduces the possibility of getting Data and Audio cross-wired.

C2. Cornell suggests that within non-shielded cables, the following colors should always be used as noted – such that when these colors are observed, the installers will always know that they are:

RED = +12 VDC

BLK = COMMON NEGATIVE FOR 12 & 24 V

WHT = +24 VDC

GRN = EARTH GROUND

POWER REQUIREMENTS:

Each Communicator RN system requires a 115 VAC, 60 Hz, 400-600 Watt power source, preferably one with Emergency Backup Support (Generator and/or Central UPS).

BATTERY BACK-UP:

Communicator RN Controllers DO NOT incorporate internal Battery Chargers. Where Battery stand-by operation is required, separate Uninterruptable Power Supplies will need to be sized as required, and furnished by the system installation contractor(s).

Usually, wall-mountable units with a hard-wired input and output works best, for installation adjacent to the Controller.

PRIMARY AC CONNECTION:

Primary AC Power should be hard-wired to the Controller Cabinet. The hard-wired AC connection should enter the Controller Cabinet via the included Outlet Box - which installs into the Controller Cabinet as follows:

- Top of Small Cabinet – Cornell Model HDN7601UA and associated Door, used with the following Controllers:
 - HTN7616UA = 32-Station, Tone / Visual Controller
 - HTN7617UA = 64-Station, Tone / Visual Controller
 - HTN7647UA = 32-Station, Single-Console Audio / Visual Controller
 - HTN7648UA = 64-Station, Single-Console Audio / Visual Controller
- Left Side of Large Cabinet – Cornell Model HDN7681UA and associated Door, used with the following Controllers:
 - HTN7616UA = 32-Station, Tone / Visual Controller
 - HTN7617UA = 64-Station, Tone / Visual Controller
 - HTN7647UA = 32-Station, Single-Console Audio / Visual Controller
 - HTN7648UA = 64-Station, Single-Console Audio / Visual Controller

(Refer to the drawings for each controller, for a detail of the cabinet and the location of the Outlet Box.)

The DC Power Supplies located within the Controller are factory-wired for operation at 115 VAC.

LOCAL DISCONNECT:

The Control Unit Cabinet is supplied with a standard duplex outlet, for installation into the cabinet. A factory pre-wired plug and cable are connected to the internal Power Supplies, such that the plug may be plugged-in or un-plugged in order to provide a local disconnect.

BACK BOXES:

Refer to the “Addressable Station Back Box & Features Guide” – as found near the end of this document for reference information. In most cases, the Installation and Service Guide for each device provides more detailed information about sizing the back boxes for each such device.

BACK BOX NOTES – IMPORTANT!:

BB1. For U.L. Listed Installations, be sure to utilize U.L. Listed Back Boxes for ALL Field Devices, and for all Splices associated with the Field Devices.

BB2. To avoid interference with the installed station, conduit must enter the single- and multi-gang back boxes through the cutouts that are on or closest to the back side of the back box!

Failure to do so can damage field station!

INSTALLATION TOOLS AND ACCESSORIES:

All Addressable Stations, as well as some Non-Addressable Stations utilize Tyco / AMP MTA-Series Insulation-Displacement Connectors for termination of the field wiring to such stations.

The use of these connectors facilitates high-density, reliable connections to the stations. Once the field wiring is terminated to the connectors, stations may be changed quickly by simply setting any DIP switches, and then transferring the terminated connectors from the existing station to the new one.

Special hand tools are required, in order to properly terminate the field wiring to MTA-Series Connectors.

Cornell Model Number HEN7623AA provides all components required for termination of the connectors used on Cornell 5000 / 5500 Stations:

Cornell Model HEN7623AA consists of the following components:

<u>CORNELL PART NO:</u>	<u>DESCRIPTION:</u>	<u>TYCO/AMP PART NO:</u>
79-6604492-101	Pistol Grip Handle / Ratchet Assembly	58074-1
73-2804492-101	Head Assembly, 0.100" Spacing	58246-1
73-2904492-102	Head Assembly, 0.156" Spacing	58247-1

USING THE MTA TERMINATION TOOLS - the process is easy, and is as follows:

- Insert the proper size head into the pistol-grip handle, and secure in place by inserting the plastic "U-Clip" into the side of the handle
- Insert the connector into the tool until it "clicks" into the last position (See Note MTA2 below)
- Cut the wire to the desired length (Do not strip the end of the wire)
- Insert the wire into the hole between the connector and the inside edge of the tool (ensure that it is fully inserted). Continue to apply light pressure to the wire during the next step.
- Squeeze the handle on the tool until the ratchet mechanism releases. The ratchet will not release until the tool is squeezed to the full extent of its insertion cycle.
- Once the handle is released, the connector should automatically be advanced to the next position.
- Once all wires are inserted, slide the connector out of the tool and inspect the end of the connector where the wires are inserted. The cut end of each wire should be near to the closed end of the associated connector position. The metal inserts for each position should bite-into the insulation of each terminated wire in two places.
- Attach the Strain Relief "Caps" (white plastic) that are included with each station over the terminations. These Caps perform two important functions:
 - They help to prevent wires from being pulled or wiggled loose from the connector
 - They help to prevent accidental contact with the metal inserts within each connector position

MTA-SERIES CONNECTOR NOTES - IMPORTANT!:

MTA1. MTA –Series Connectors utilized on 5000/5500 Nurse Call Stations are RED, which designates them for use with #22 AWG wiring. Note that ALL "R" & "X" Cables are specified to be #22 AWG

MTA2. When terminated with hand tools, AMP MTA Connectors terminate in REVERSE ORDER

Example: If terminating a 10-Position Connector, when inserted into the tool, the first wire to be terminated will be Position Number 10 / Terminal 10

MTA3. MTA Connectors are designed to be terminated ONCE. Since the slots in the internal metal "clips" open-up slightly each time a wire is inserted into them, they may not make proper contact when re-terminated.

Because of this, when errors occur during termination, it is best to replace the connector. If a wire or two are mis-terminated, they can be gently pried out of the connector, and can usually be re-inserted once. However, Cornell recommends that such re-terminations should be fully tested, in order to ensure that a good connection has been made.

A list of Cornell Part Numbers for replacement MTA Connectors follows. For large projects, it may be advisable to order a few "spares".

CORNELL PART NUMBER:	SIZE:	NUMBER OF POSITIONS:
73-0170108-002	SMALL	2
73-0170108-004	SMALL	4
73-0170108-005	SMALL	5
73-0170108-008	SMALL	8
73-0170108-010	SMALL	10
73-0170108-020	SMALL	20
73-0270018-003	LARGE	3
73-0270018-002	LARGE	6
73-0270018-001	LARGE	9

*SMALL CONNECTORS =
0.100" Spacing on Centers*

*LARGE CONNECTORS =
0.156" Spacing on Centers*

MTA4. MTA Connectors have numbers molded into them for the Terminal Numbers / Positions. You may need to "squint" to see them, but they are on there!

MTA5. MTA-Series Connectors are designed for Single-Conductor Terminations. Therefore, if multiple field conductors must be terminated to a single position on such connectors, use the following method:

- Terminate a single "pigtail" lead to the connector as required.
- Join the other conductors to the pigtail lead via small wire nuts, crimp-caps, b-connectors, etc.

MTA6. When terminated connectors are inserted onto their corresponding pin-headers on the Stations, field wiring will ALWAYS leave the connector inwards - towards the center of the station (NEVER Outwards – towards the perimeter)

REFERENCE DRAWINGS AND CHARTS:

The following reference materials have been included within this Reference Guide – they appear in the order listed here:

DRAWING "5500-WIRE": This drawing should be useful in planning & estimating the wiring required for a typical 5000 / 5500 Nurse Call System

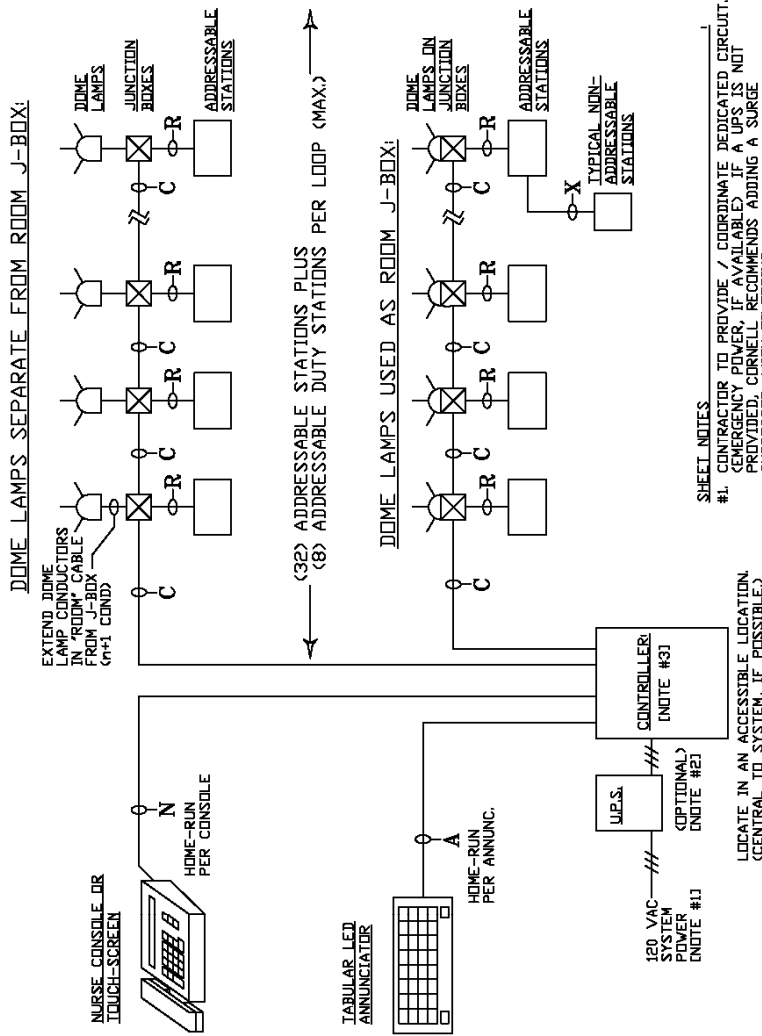
SPREADSHEET – "ADDRESSABLE STATIONS – BACK BOX & FEATURES GUIDE":

This table is useful for determining the following information about various Addressable Station:

- The proper size back box to use (refer to Installation & Service Guide for individual stations for more detailed information)
- The proper Call Cord to use with Addressable Patient Stations
- Various Features that are / are not available for the Addressable Stations

SPREADSHEET – "ADDRESSABLE STATIONS – INPUTS AVAILABLE FOR NON-ADDRESSABLE STATIONS": This table is useful for determining how many non-addressable stations may be supported by each Addressable Station, and what their default designations are. (The designations for available Inputs / Outputs may be changed by use of "Definable Station Types" – consult "Appendix A" for more info.)

SPREADSHEET – "DOME LAMP SELECTION GUIDE": This chart is intended to assist you in selecting the proper Dome Lamp for use with various Addressable Stations. This chart complies with the Default Input / Output designations for the various stations, and for the Default Lamp Color Scheme used within the Communicator RN System.



COMMUNICATOR RN SYSTEM WIRING				
LETTER IN DRAWING	DESCRIPTION	MAXIMUM DISTANCE (DETAILS)	NUMBER OF CABLES / TYPE OF EACH CABLE	PURPOSE / NOTES(S)
C	CORRIDOR CABLE	C+R=1000 FT PER LOOP (CAN SPLIT INTO 2 RUNS)	(3) DR (2) CABLES: (1) 4-COND, #16 AWG (2) #22 AWG TWISTED PR, SHIELDED (3) #22 AWG TWISTED PR, SHIELDED	POWER DATA AUDIO 1, 2
R	ROOM CABLE	C+R=1000 FT PER LOOP (CAN SPLIT INTO 2 RUNS)	(2) DR (3) CABLES: (1) 4-COND, #22 AWG (2) #22 AWG TWISTED PR, SHIELDED (3) #22 AWG TWISTED PR, SHIELDED	POWER DATA AUDIO 2, 3, 5 3, 4
X	NON-ADDR STATION	APPROX. 100 FEET	(1) CABLE: (1) 6-COND, #22 AWG	NA. STN 3
N	NURSE CONSOLE CABLE	250 FEET TO EACH CONSOLE	(3) CABLES: (1) 10-COND, #22 AWG (2) #22 AWG TWISTED PR, SHIELDED (3) #22 AWG TWISTED PR, SHIELDED	PWR/MISC DATA AUDIO 6
A	ANNUNC. CABLE	600 FEET TO EACH ANNUNCIATOR	(2) CABLES: (1) 3 TWISTED PAIRS, #22 AWG (2) 4-COND, #22 AWG	DATA PWR/GND 7

WIRE / CABLE NOTES:

- GENERAL - CORNELL RECOMMENDS THAT ALL CABLES USED SHOULD BE STRANDED TYPE.
- Shields must be spliced together and separated (audio separated from data), then taped-up, in order to isolate them from ground (only grounded at controller end).
 - Audio cables may be omitted for tone/visual (non-audio) systems, and for non-audio station types (such as smart stations, etc.).
 - Cables terminated at Addressable Stations MUST be #22 AWG, due to the insulation displacement connectors that are used (AMP MTA-Series connectors).
 - Power and Lamp cables may be combined into a single cable, if desired. Displacement connectors that are used (AMP MTA-Series connectors).
 - Shields dead-end at Addressable Stations, clip drain wire & tape-up.
 - May be combined into a single cable if the following is used:
Belden #8774 = 1(3) individually shielded, twisted pairs
 - May use (2) #22 AWG CAT-5 cables, if platted to connectors via #22 AWG stranded. (Use pairs in 1 cable for data, double-up pairs in other cable for power/gnd)



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DATE: JANUARY 26, 2009

TITLE: TYPICAL COMMUNICATOR RN WIRING

SYSTEM: 5500 / 5000 SERIES

DRAWING # 5500-WIRE SHEET 1 OF 1

COMMUNICATOR RN - ADDRESSABLE STATIONS - BACK BOX & FEATURES GUIDE:

STATION MODEL NO.:	STATION TYPE DESCRIPTION:	MASONRY BACK BOX SIZE:	CALL CORD TYPE:	STANDARD FEATURES OF STATION:					NOTE(S)
				MEMBRANE SWITCH	AUX. JACK	BED RAIL (HILL-ROM)	LIGHT CONTROL	TV CONTROL	
	TONE / VISUAL STATIONS:								
HWN7600UC	PATIENT - TONE/VIS - STD - SINGLE	1G	1/4" 3-COND	E / R	-	-	-	-	
HWN7630UC	(SAME AS 7600 + SAT. STN CONN)	1G	1/4" 3-COND	E / R	-	-	-	-	ONLY STATION THAT SUPPORTS SATELLITE STATION
HWN7687UC	(SAME AS 7600 / CODE BLUE SW.)	1G	1/4" 3-COND	CB / R	-	-	-	-	FOR "EMERGENCY" PULL CALL CORD OUT OF JACK
HWN7017UC	PATIENT - TONE/VIS - STD - SGL (20-PIN CC)	2G	PILLOW SPKR (TV)	E / R	-	-	SEE NOTE		TV/LIGHT CONTROLS DIRECT-WIRE TO CALL CORD JACK
HWN7688UA	PATIENT - TONE/VIS - ECONO - SINGLE	2G	1/4" 3-COND	-	-	-	-	-	
HWN7678UC	PATIENT - TONE/VIS - ECONO - DUAL	3G	(2) 1/4" 3-COND	-	-	-	-	-	ROUTINE & CORD-OUT LAMP OUTPUTS PER BED
HWN7628UC	SMART STATION	SEE NOTE	-	-	-	-	-	-	OCCUPIES 1-G OF MULTI-GANG / NEEDS BLANK COVER
HWN7619UC	SMART PUSH-FOR-HELP STATION	1G	-	E / R	-	-	-	-	
HWN7620UC	SMART CODE BLUE STATION	1G	-	CB / R	-	-	-	-	
	AUDIO / VISUAL STATIONS								
HWN7633UC	PATIENT - AUD/VIS - STANDARD - SINGLE	3G	PILLOW SPEAKER	E / R	Y	Y	Y	Y	
HWN7643UC	PATIENT - AUD/VIS - STANDARD - DUAL	4G	(2) PILLOW SPKR	E / R	Y	-	Y2	Y2	NO SEPARATE DOME LAMP OUTPUTS PER BED
HWN7653UC	(SAME AS 7643 + BED RAIL CONNECTN)	4G	(2) PILLOW SPKR	E / R	Y	Y	Y2	Y2	NO SEPARATE DOME LAMP OUTPUTS PER BED
HWN7631UC	PATIENT - AUD/VIS - PRIVACY - SINGLE	2G	PILLOW SPEAKER	E / R	-	-	-	Y	
HWN7641UC	PATIENT - AUD/VIS - PRIVACY - DUAL	3G	(2) PILLOW SPKR	E / R	Y	-	Y2	Y2	NO SEPARATE DOME LAMP OUTPUTS PER BED
HWN7651UC	(SAME AS 7641 + BED RAIL CONNECTN)	3G	(2) PILLOW SPKR	E / R	Y	Y	Y2	Y2	NO SEPARATE DOME LAMP OUTPUTS PER BED
HWN7669UC	PATIENT - AUD/VIS - ECONO - SINGLE	2G	1/4" 3-COND	-	-	-	-	-	
HWN7670UC	(PUSHBUTTON VERSION OF 7669)	2G	-	-	-	-	-	-	
HWN7679UC	PATIENT - AUD/VIS - ECONO - DUAL	3G	(2) 1/4" 3-COND	-	-	-	-	-	SEPARATE ROUTINE LAMP OUTPUTS PER BED
	DUTY, STAFF, & COMBO. STATIONS:								
HWN7606UA	DUTY STATION (TONES/LEDS - NO AUDIO)	2G	-	-	-	-	-	-	OUTPUTS 1, 2, & 3 MIMIC G, Y, R LEDS ON FACE
HWN7649UC	STAFF STATION (PUSHBUTTON INTERCOM)	3G	-	S / R	-	-	-	-	CAN ONLY DRIVE (2) BULBS, MAX
HWN7654UC	STAFF/DUTY COMBINATION STATION	3G	-	S / R	-	-	-	-	OUTPUTS 1, 2, & 3 MIMIC G, Y, R LEDS ON FACE
	(ALSO SEE HWN7670UC - ABOVE)								

ALL MASONRY BOXES
3-1/2 INCHES DEEP

CB = CODE BLUE
E = "ASSIST" EMERGENCY
R = RESET
S = "STAFF" CALL (INDICATES IN SAME WAY AS ROUTINE; BUT SAYS "STAFF")

COMMUNICATOR RN - ADDRESSABLE STATIONS - INPUTS AVAILABLE FOR NON-ADDRESSABLE STATIONS:

		INPUTS / USAGE:									
STATION MODEL NO.:	USE WITH SWITCH TYPE ▶▶▶	CALL-1 & RESET MOM.	CALL-2 & RESET MOM. BATH EMERG	CALL-3 & RESET MOM. ASSIST EMERG	CALL-4 & RESET MOM. CODE BLUE	CALL-5 MAINT. AUX. HIGH	CALL-6 MOM. ROUTINE	CALL-7 MOM. ASSIST EMERG	NOTE(S)		
	STATION TYPE DESCRIPTION:	ROUTINE									
	TONE / VISUAL PATIENT STATIONS:										
HWN7600UC	PATIENT - TONE/VIS - STD - SINGLE	(N/A)	J1-5, R4	(N/A)	J1-7, R6	J1-8			J7 IS NOT INSTALLED ON HWN7600		
HWN7630UC	PATIENT - TONE/VIS - STD - SINGLE (+SAT)	J7-3, RF	J1-5, R4	J7-4, RF	J1-7, R6	J1-8	J7-1, RS	J7-2, RS			
HWN7667UC	PATIENT - TONE/VIS - STD - SGL (CODE SW)	J7-3, RF	J1-5, R4	J7-4, RF	J1-7, R6	J1-8	J7-1, RS	J7-2, RS	CALL-6 & -7 FOR HWN7625UA ONLY		
HWN7017UC	PATIENT - TONE/VIS - STD - SGL (20-PIN CC)	J7-3, RF	J1-5, R4	J7-4, RF	J1-7, R6	J1-8	(N/A)	(N/A)			
HWN7668UA	PATIENT - TONE/VIS - ECONO - SINGLE	J7-3, RF	J1-6, R5	J7-4, RF	J1-8, R7	(N/A)	(N/A)	(N/A)	CALL-5 (AUX. ALARM) UNAVAILABLE		
HWN7678UC	PATIENT - TONE/VIS - ECONO - DUAL	(N/A), R4	J1-6, R5	(N/A)	J1-8, R7	J1-9	(N/A)	(N/A)			
HWN7628UC	SMART STATION	J7-3, R5	J1-5, R4	J7-4, R6	J1-7, R6	J1-8	(N/A)	(N/A)	ALL 5 INPUTS ARE PROGRAMMABLE		
HWN7619UC	SMART PUSH-FOR-HELP STATION	J7-3, R5	J1-5, R4	J7-4, R6	J1-7, R6	J1-8	(N/A)	(N/A)			
HWN7620UC	SMART CODE BLUE STATION	J7-3, R5	J1-5, R4	J7-4, R6	J1-7, R6	J1-8	(N/A)	(N/A)			
HWN7633UC	PATIENT - AUD/VIS - STANDARD - SINGLE	(N/A)	J2-6, R5	(N/A)	J2-8, R7	J2-9	(N/A)	(N/A)			
	BED RAIL (HILL/ROM) CONNECTOR	J7-7, R9	(N/A)	J7-9, RF	(N/A)	(N/A)	(N/A)	(N/A)			
HWN7643UC	PATIENT - AUD/VIS - STANDARD - DUAL	(N/A)	J1-6, R5	(N/A)	J1-8, R7	J1-9	(N/A)	(N/A)			
HWN7653UC	PATIENT - AUD/VIS - STD - DUAL (+BED RAIL)	(N/A)	J1-6, R5	(N/A)	J1-8, R7	J1-9	(N/A)	(N/A)			
	BED RAIL (HILL/ROM) CONNECTOR	J3-1, RF	(N/A)	J3-9, RF	(N/A)	(N/A)	J11-1, RF	(N/A)			
HWN7631UC	PATIENT - AUD/VIS - PRIVACY - SINGLE	(N/A)	J2-6, R5	(N/A)	J2-8, R7	J2-9	(N/A)	(N/A)			
HWN7641UC	PATIENT - AUD/VIS - PRIVACY - DUAL	(N/A)	J1-6, R5	(N/A)	J1-8, R7	J1-9	(N/A)	(N/A)			
HWN7651UC	PATIENT - AUD/VIS - PRIV - DUAL (+BED RAIL)	(N/A)	J1-6, R5	(N/A)	J1-8, R7	J1-9	(N/A)	(N/A)			
	BED RAIL (HILL/ROM) CONNECTOR	J3-1, RF	(N/A)	J3-9, RF	(N/A)	(N/A)	J11-1, RF	(N/A)			
HWN7669UC	PATIENT - AUD/VIS - ECONO - SINGLE	J7-3, RF	J1-6, R5	J7-4, RF	J1-8, R7	(N/A)	(N/A)	(N/A)	CALL-5 (AUX. ALARM) UNAVAILABLE		
HWN7670UC	PATIENT - AUD/VIS - ECONO - (PUSHBUTTON)	J7-3, RF	J1-6, R5	J7-4, RF	J1-8, R7	(N/A)	(N/A)	(N/A)	CALL-5 (AUX. ALARM) UNAVAILABLE		
HWN7679UC	PATIENT - AUD/VIS - ECONO - DUAL	(N/A), R4	J1-6, R5	(N/A)	J1-8, R7	J1-9	(N/A)	(N/A)			
HWN7606UA	DUTY STATION (TONES & LEDS - NO AUDIO)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	STATION IS OUTPUT-ONLY, NO INPUTS		
HWN7649UC	STAFF STATION (PUSHBUTTON INTERCOM)	(N/A)	J2-6, R5	(N/A)	(N/A)	J2-9	(N/A)	(N/A)	CALL-2 DEFAULT IS "STAFF PRESENT"		
HWN7654UC	STAFF/DUTY COMBO. STATION (DOES BOTH)	(N/A)	J2-6, R5	(N/A)	(N/A)	J2-9	(N/A)	(N/A)	CALL-2 DEFAULT IS "STAFF PRESENT"		

Jn-n = INPUT IS AVAILABLE AT NOTED CONNECTOR AND PIN NUMBER
 Rn = RESET INPUT POINT NUMBER (SAME CONNECTOR AS "CALL" PIN)
 RF = RESET VIA STATION FACEPLATE SWITCH ONLY
 RS = RESET VIA SWITCH ON SATELLITE STATION ONLY
 = AVAILABLE FOR USE WITH NON-ADDRESSABLE STATIONS

COMMUNICATOR RN - DOME LAMP SELECTION GUIDE:

DOME LAMP COLORS / USAGE:									
STATION MODEL NO.:	STATION TYPE DESCRIPTION:	MIN. NO. OF BULBS:	WHT (ROUTINE)	YEL (ORG) CORD OUT (ASSIST)	RED (BATH)	BLU (CODE)	GRN (REMIND)	(BACKUP)	NOTE(S)
HWN7600UC	PATIENT - TONE/VIS - STD - SINGLE	2+	X	X	O	O	-	(n/a)	
HWN7630UC	PATIENT - TONE/VIS - STD - SINGLE (+SAT)	2+	X	X	O	O	-	(n/a)	
HWN7667UC	PATIENT - TONE/VIS - STD - SGL (CODE SW)	2+	X	X	O	O	-	(n/a)	
HWN7017UC	PATIENT - TONE/VIS - STD - SGL (20-PIN CC)	2+	X	X	O	O	-	(n/a)	
HWN7668UA	PATIENT - TONE/VIS - ECONO - SINGLE	2+	X	X	O	O	-	(n/a)	
HWN7678UC	PATIENT - TONE/VIS - ECONO - DUAL	2+ OR 4+	2X	2X	O	O	-	(n/a)	DEFAULT CONFIG = (2) ROUT / (2) ASSIST
HWN7628UC	SMART STATION	SEE NOTE	O	O	O	O	O	(n/a)	DEPENDS ENTIRELY ON CONNECTED STATIONS
HWN7619UC	SMART PUSH-FOR-HELP STATION	1+	O	X	O	O	O	(n/a)	ROUTINE REQUIRES SATELLITE STATION
HWN7620UC	SMART CODE BLUE STATION	1+	O	O	O	X	O	(n/a)	ROUTINE REQUIRES SATELLITE STATION
HWN7633UC	PATIENT - AUD/VIS - STANDARD - SINGLE	3+	X (NP)	X (AB)		O	R	O	
HWN7643UC	PATIENT - AUD/VIS - STANDARD - DUAL	3+	X (NP)	X (AB)		O	R	O	NO SEPARATE DOME LAMP OUTPUTS PER BED
HWN7653UC	PATIENT - AUD/VIS - STD - DUAL (+BED RAIL)	3+	X (NP)	X (AB)		O	R	O	NO SEPARATE DOME LAMP OUTPUTS PER BED
HWN7631UC	PATIENT - AUD/VIS - PRIVACY - SINGLE	3+	X (NP)	X (AB)		O	R	O	
HWN7641UC	PATIENT - AUD/VIS - PRIVACY - DUAL	3+	X (NP)	X (AB)		O	R	O	NO SEPARATE DOME LAMP OUTPUTS PER BED
HWN7651UC	PATIENT - AUD/VIS - PRIV - DUAL (+BED RAIL)	3+	X (NP)	X (AB)		O	R	O	NO SEPARATE DOME LAMP OUTPUTS PER BED
HWN7669UC	PATIENT - AUD/VIS - ECONO - SINGLE	3+	X (NP)	X (AB)		O	R	(n/a)	
HWN7670UC	PATIENT - AUD/VIS - ECONO - (PUSHBUTTON)	3+	X (NP)	X (AB)		O	R	(n/a)	
HWN7679UC	PATIENT - AUD/VIS - ECONO - DUAL	4+	2X (NP)	X (AB)		O	R	(n/a)	SEPARATE LAMP OUTPUTS PER BED
HWN7606UA	DUTY STATION (TONES & LEDS - NO AUDIO)	O+	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	OUTPUTS 1, 2, & 3 MIMIC G, Y, R LEDS ON FACE
HWN7649UC	STAFF STATION (PUSHBUTTON INTERCOM)	O+	O (NP)	(n/a)	(n/a)	(n/a)	S	(n/a)	CAN ONLY DRIVE (2) BULBS, MAX
HWN7654UC	STAFF/DUTY COMBO. STATION (DOES BOTH)	O+	O (NP)	(n/a)	(n/a)	(n/a)	S	(n/a)	OUTPUTS 1, 2, & 3 MIMIC G, Y, R LEDS ON FACE

X = USUALLY REQUIRED FOR DEFAULT STATION CONFIGURATION
 O = OPTIONAL - ADD IF ASSOCIATED NON-ADDRESSABLE STATION TYPE IS USED.
 R = RECOMMENDED, IN MOST CASES
 (n/a) = STATION DOES NOT HAVE THIS TYPE OF OUTPUT
 2X = DEFAULT CONFIGURATION PROVIDES TWO OF THESE
 (NP) = NON-PROGRAMMABLE OUTPUT, DIRECTLY LINKED TO INPUT VIA INTERNAL CIRCUITS
 (AB) = (BECAUSE OF THIS, THEY CAN NOT BE MAPPED FROM ONE STATION TO ANOTHER)
 S = ASSIST / BATH OUTPUTS COMBINED ON AV STATIONS
 = THIS IS THE ONLY PROGRAMMABLE OUTPUT AVAILABLE ON STAFF-TYPE STATIONS